

AMENDMENTS TO THE CLAIMS

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1. (Currently Amended) A predistortion control device comprising (1), including:
 - a first predistortion control input selectively connected (10) connectable to a power amplifier output (24);
 - a second predistortion control input selectively connected (11) connectable to a signal contact (30,31) of a predistortion device (3); and
 - a predistortion control output selectively connected (12) connectable to a control contact of the predistortion device, the predistortion control device (1) further including:
 - a cross-correlator device (110) connected with
 - a first cross-correlator input (1101,1101I,1101Q) to the first predistortion control input (10) and
 - a second cross-correlator input (1102,1102I,1102Q) to the second predistortion control input (11), which wherein the cross-correlator device (110) further has a cross-correlator output (1112) (1112) at which a cross-correlation signal can be presented, the cross-correlation signal representing a measured cross-correlation (R m) of signals presented at the first cross-correlator input (1101,1101I,1101Q) and the second cross-correlator input (1102,1102I,1102Q);
 - a predistortion function selector device (120), connected with
 - a selector input (1210) to the cross-correlator output (1112), and with
 - a selector output (1211) to the predistortion control output (12), said predistortion function selector device being arranged to compare the measured cross-correlation with a cross-correlation model stored in a memory (122) and determining on the basis of said comparison a suitable predistortion function and presenting a predistortion control signal at said

PN

selector output said predistortion control signal representing said ~~a~~
predistortion function.

2. (Currently Amended) The [[A]] predistortion control device (1) as
claimed in claim 1, further including a quantiser device (101) connected with a quantiser
input to the first predistortion control input, and with a quantiser output to the first cross-
correlator input(1101, 1101I, 1101Q).

3. (Currently Amended) The [[A]] predistortion control device (1) as
claimed in claim 2, wherein the quantiser device (101) is a single-bit quantiser.

4. (Currently Amended) The [[A]] predistortion control device (1) as
claimed in claim 2 ~~or 3~~, wherein the quantiser (101) is operable as a sub-sampling
device.

5. (Currently Amended) The [[A]] predistortion control device (1) as
claimed in claim 2 any one of claims 2-4, wherein the cross-correlator device (110)
includes a single-bit multiplier (111).

6. (Currently Amended) The [[A]] predistortion control device (1) as
claimed in claim 2 any one of claims 2-5, further including a distortion device (102)
connected with a distortion input to the first predistortion control input, and connected
with a distortion output to the quantiser input.

7. (Currently Amended) The [[A]] predistortion control device (1) as
claimed in claim 6, wherein the distortion device includes a random distortion device.

8. (Currently Amended) The [[A]] predistortion control device (1) as
claimed in claim 6 ~~or 7~~, wherein the distortion device includes a periodic distortion
device.

9. (Currently Amended) The [[A]] predistortion control device (1) as claimed in claim 1 any one of the preceding claims, wherein the second predistortion control input (11) is connectable to a signal output of a predistortion device.

10. (Currently Amended) The [[A]] predistortion control device (1) as claimed in claim 1 any one of the preceding claims, further including:

an averaging device (112) capable of determining a time averaged cross-correlation value from a memory connected to the cross-correlator output (1112), for storing a number of cross-correlation values, which wherein the averaging device has an averaging output connected to the selector input, for presenting time averaged cross-correlation values to the predistortion function selector device (120).

11. (Currently Amended) An assembly of a The predistortion control device, as claimed in claim 1 (1) as claimed in any one of claims 1-10, and a predistortion device (3) having signal contacts (30,31) further comprising: including a predistortion input (30) for receiving an original signal to be predistorted; and a predistortion output (31) for providing a predistorted output signal based on the original signal, and

a control input contact (32) connected to the predistortion control output (12) at which a predistortion control signal can be provided, in response to which predistortion control signal the predistortion device uses a predistortion function corresponding to the predistortion control signal to generate the predistorted output signal.

12. (Currently Amended) An assembly The predistortion control device as claimed in claim 11, further including a power amplifier (2) connected with:

an amplifier input (20) to the predistortion output (31), and
with an amplifier output (21) to the first predistortion control input (100).

13. (Canceled)

PN

13, 14. (Currently Amended) A predistortion control method, comprising the steps of: including:

receiving a power amplifier output signal;
receiving a predistortion signal from a signal contact of a predistortion device;
determining a measured cross-correlation value by cross-correlating the power amplifier output signal and the predistortion signal;
comparing the measured cross-correlation value with a [[an]] cross-correlation model;
determining a suitable predistortion function from said comparing step a suitable predistortion function, and
providing a predistortion control signal representing said predistortion function.

14, 15. (Previously Presented) The [[A]] predistortion control method, as claimed in claim 13, further comprising:

minimising a difference between the measured cross-correlation value with a an model cross-correlation value, and
deriving from said minimizing step the predistortion function.

15. (New) An arrangement for controlling predistortion in a power amplifier, the arrangement comprising:

a predistortion control device;
a first predistortion control input selectively connected to a power amplifier output;
a second predistortion control input selectively connected to a signal contact of a predistortion device; and
a predistortion control output selectively connected to a control contact of the predistortion device, the predistortion control device further including:
a cross-correlator device connected with
a first cross-correlator input to the first predistortion control input
and

a second cross-correlator input to the second predistortion control input, wherein the cross-correlator device further has a cross-correlator output at which a cross-correlation signal can be presented, the cross-correlation signal representing a measured cross-correlation (Rm) of signals presented at the first cross-correlator input and the second cross-correlator input;

a predistortion function selector device, connected with a selector input to the cross-correlator output, and with a selector output to the predistortion control output, said pre-distortion function selector device being arranged to compare the measured cross-correlation with a cross-correlation model stored in a memory and determining on the basis of said comparison a suitable predistortion function and presenting a predistortion control signal at said selector output said predistortion control signal representing said predistortion function.

PN

¹⁶ ~~17~~ (New) The arrangement as claimed in claim ¹⁵ ~~16~~, further including a quantiser device connected with a quantiser input to the first predistortion control input, and with a quantiser output to the first cross-correlator input.

¹⁷ ~~18~~ (New) The arrangement as claimed in claim ¹⁵ ~~16~~, wherein the quantiser device is a single-bit quantiser.

¹⁸ ~~19~~ (New) The arrangement as claimed in claim ¹⁶ ~~17~~, wherein the quantiser is operable as a sub-sampling device.

¹⁹ ~~20~~ (New) The arrangement as claimed in claim ¹⁶ ~~17~~, wherein the cross-correlator device includes a single-bit multiplier.

²⁰₂₁ (New) The arrangement as claimed in claim ¹⁶₁₇, further including a distortion device connected with a distortion input to the first predistortion control input, and connected with a distortion output to the quantiser input.

²¹₂₂ (New) The arrangement as claimed in claim ²⁰₂₁, wherein the distortion device includes a random distortion device.

²²₂₃ (New) The arrangement as claimed in claim ²⁰₂₁, wherein the distortion device includes a periodic distortion device.

²³₂₄ (New) The arrangement as claimed in claim ¹⁵₁₆, wherein the second predistortion control input is connectable to a signal output of a predistortion device.

²⁴₂₅ (New) The arrangement as claimed in claim ¹⁵₁₆, further including: an averaging device capable of determining a time averaged cross-correlation value from a memory connected to the cross-correlator output, for storing a number of cross-correlation values, wherein the averaging device has an averaging output connected to the selector input, for presenting time averaged cross-correlation values to the predistortion function selector device.

²⁵₂₆ (New) The arrangement as claimed in claim ¹⁵₁₆, further comprising: a predistortion input for receiving an original signal to be predistorted; a predistortion output for providing a predistorted output signal based on the original signal, and

a control input contact connected to the predistortion control output at which a predistortion control signal can be provided, in response to which predistortion control signal the predistortion device uses a predistortion function corresponding to the predistortion control signal to generate the predistorted output signal.

PN

26 27. (New) The arrangement as claimed in claim *26*, wherein the power amplifier is connected with:

- an amplifier input to the predistortion output, and
- an amplifier output to the first predistortion control input.